LINE POSITION AND LINE INTENSITY ANALYSES OF THE ν_2 BAND OF $H_2{}^{18}O$

L. H. COUDERT, *LISA, CNRS/Universités Paris 12 et 7, 61 Avenue du Général de Gaulle, 94010 Créteil, France*.

The $H_2{}^{18}O$ isotopic species of water has already been the subject of many experimental investigations. Microwave data,[a] far infrared,[b] and infrared data[c] are available and involve the ground vibrational state (000) and the first excited vibrational state of the ν_2 mode (010). Although the $H_2{}^{18}O$ isotopic species of water is the most abundant species after the main isotopic species and although it is used to monitor water vapor transport in the atmosphere,[d] no global analysis of these data has been carried out with a view towards building a data base of spectroscopic parameters for this molecule in the ν_2-band region.

In the paper, the results of a global analysis of the $H_2{}^{18}O$ data will be presented. Line position and lines intensity analyses will be performed using the Bending-Rotation Hamiltonian approach[e] which accounts for the anomalous centrifugal distortion displayed by water and which has already been successfully applied to the main isotopic species. With the results of both analyses, we hope to be able to build a new line list and to compare it with those available from various data bank.

---

[a] De Lucia, Helminger, Cook, and Gordy, *Phys. Rev. A* **6,** 1324 (1972).

[b] Kauppinen and Kyrö, *J. Molec. Spectrosc.* **84,** 405 (1980); Partridge, *J. Molec. Spectrosc.* **87,** 429 (1981); *and* Mikhailenko, Tyuterev, and Mellau, *J. Molec. Spectrosc.* **217,** 195 (2003).

[c] Guelachvili, *J. Opt. Soc. Am.* **73,** 137 (1983) *and* Toth, *J. Opt. Soc. Am. B* **9,** 462 (1992).

[d] Keith, *J. Geophysical Research Atmosphere* **105,** 15167 (2000).

[e] Coudert, *J. Molec. Spectrosc.* **181,** 246 (1997) *and* Coudert, *Mol. Phys.* **96,** 941 (1999).